Abstract of the Disclosure

A hybrid lens with a high numerical aperture is described. The hybrid lens comprises a refractive surface that refracts incident light and a diffractive surface that diffracts light exiting the lens, the diffracting surface designed by a sag satisfying the following Equation:

$$sag = \frac{f_D + m\lambda - \sqrt{f_D^{\,2} + r^2}}{n-1},$$

wherein f_D is a distance from a center peak to a focal point of the hybrid lens, r is a height from a center axis to each peak of the hybrid lens , n is the refractive index of the hybrid lens, λ is the wavelength of incident light and m is an integer. The hybrid lens is small and lightweight and capable of removing chromatic aberration.